Setup - Parts

HFRS Tandem Supply System Kit

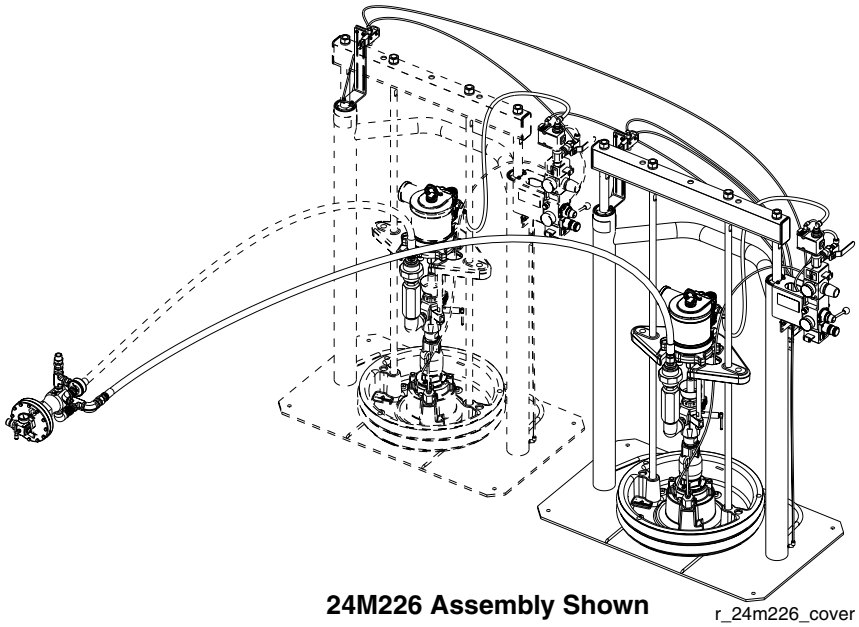
3A2264A
EN

For use with non-heated bulk supply of medium to high viscosity sealants and adhesive materials. For professional use only.

Not approved for use in European explosive atmosphere locations.

125 psi (0.9 MPa, 9 bar) Maximum Air Inlet Pressure - S20 3 in. rams
150 psi (1.0 MPa, 10 bar) Maximum Air Inlet Pressure - D200 3 in. rams

Important Safety Instructions
Read all warnings and instructions in manual 3A2175. Save all instructions.



24M226 Assembly Shown

r_24m226_cover

PROVEN QUALITY. LEADING TECHNOLOGY.

Contents

Related Manuals 3
Models 4
Overview 5
Kit Description 5
Pneumatic Crossover System Components 6
Integrated Air Controls 8
Air Line Accessories 8
Setup 9
Ram Installation and Setup 9
Grounding 10
Pressure Relief Procedure 10
Startup 11
Shutdown 12
Prime 12
Troubleshooting 13
Repair 14
Ram Repair 14
Pump Repair 14
Crossover Schematics 14
Schematics 15
Pneumatic Crossover 15
D200 Ram Tube Connection Diagram 16
S20 Ram Tube Connection Diagram 17
Parts 18
Tandem Supply System - D200 18
Tandem Supply System - S20 20
Pneumatic Crossover Kits 22
Pump Outlet Check Valve Kits 25
Technical Data 26
Graco Standard Warranty 28
Graco Information 28

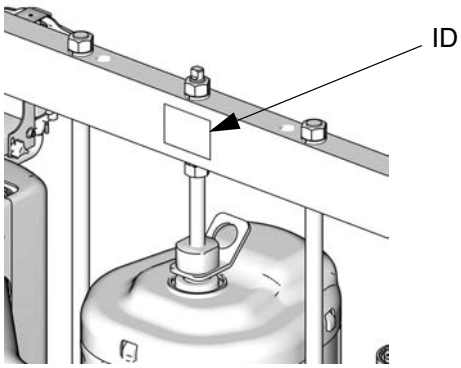
Related Manuals

Component Manuals in U.S. English:

Manual	Description
313526	Supply Systems Operation
313527	Supply Systems Repair-Parts
312375	Check-Mate® Displacement Pumps Instructions-Parts
312376	Check-Mate® Pump Packages Instruction-Parts
312889	60 cc Check-Mate Displacement Pump Repair-Parts
312374	Air Controls Instructions-Parts

Models

Check the identification plate (ID) for the 6-digit part number of your tandem system.



To order replacement parts, see **Parts** starting on page 18.

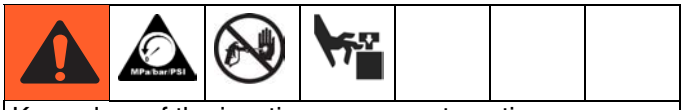
Each tandem supply kit consists of one single air-powered ram supply system and supply hose, as well as all the components necessary to configure all pneumatic tandem supply system controls. This kit must be added to an identical single ram supply system (identified with the model information) with supply hoses to make up a complete tandem supply unit. This kit is intended only for use with HFRS systems that include a D200 or S20 supply system (See manual 3A2175). Attempts to integrate with other systems may not be functional and may require additional parts.

Model	Description	To Be Installed with Existing Supply System
24M226	Tandem Crossover Kit, 20:1, 55 gallon, Carbon Steel	CM7A59
24M227	Tandem Crossover Kit, 20:1, 55 gallon, Stainless Steel	CM7C58
24M228	Tandem Crossover Kit, 20:1, 5 gallon, Carbon Steel	CM7A3C
24M229	Tandem Crossover Kit, 20:1, 5 gallon, Stainless Steel	CM7C3F

Overview

Kit Description

Each tandem supply kit consists of one single air-powered ram supply system and supply hose, as well as all the components necessary to configure all pneumatic tandem supply system controls. This kit must be added to an identical single ram supply system (identified with the model information) with supply hoses to make up a complete tandem supply unit. This kit is intended only for use with HFRS systems that include a D200 or S20 supply system (See manual 3A2175). Attempts to integrate with other systems may not be functional and may require additional parts.



Keep clear of the inactive ram, as automatic crossover may occur unexpectedly. To repair or adjust the ram, first follow all steps of the **Pressure Relief Procedure** on page 10.

Pneumatic Crossover System Components

NOTE:
D200, and S20 sizes are used in pneumatic crossover systems.

FIG. 1. shows a pneumatic crossover system. Refer to manual 313526 (supplied) for ram installation and operating instructions. The pneumatic crossover operates as follows:

During system operation, as the ram approaches the drum bottom, the top of the ram contacts the limit switch (E). The limit switch shuts off air to the air motor via a solenoid valve (Y), which stops air flow to one motor and starts air flow to the other air motor. This allows continuous material flow and changing of material drums.

The position of the limit switch (E) on the ram determines when the air motor is turned off. Start by positioning the limit switch to trip when the ram platen (D) is 1 in. (25 mm) from the bottom of the drum. During operation the position may be adjusted as desired.

The bypass valve (L) allows you to prime the inactive pump after a drum change. Open the valve to prime the pump. Close the valve when priming is complete, and during normal operation.

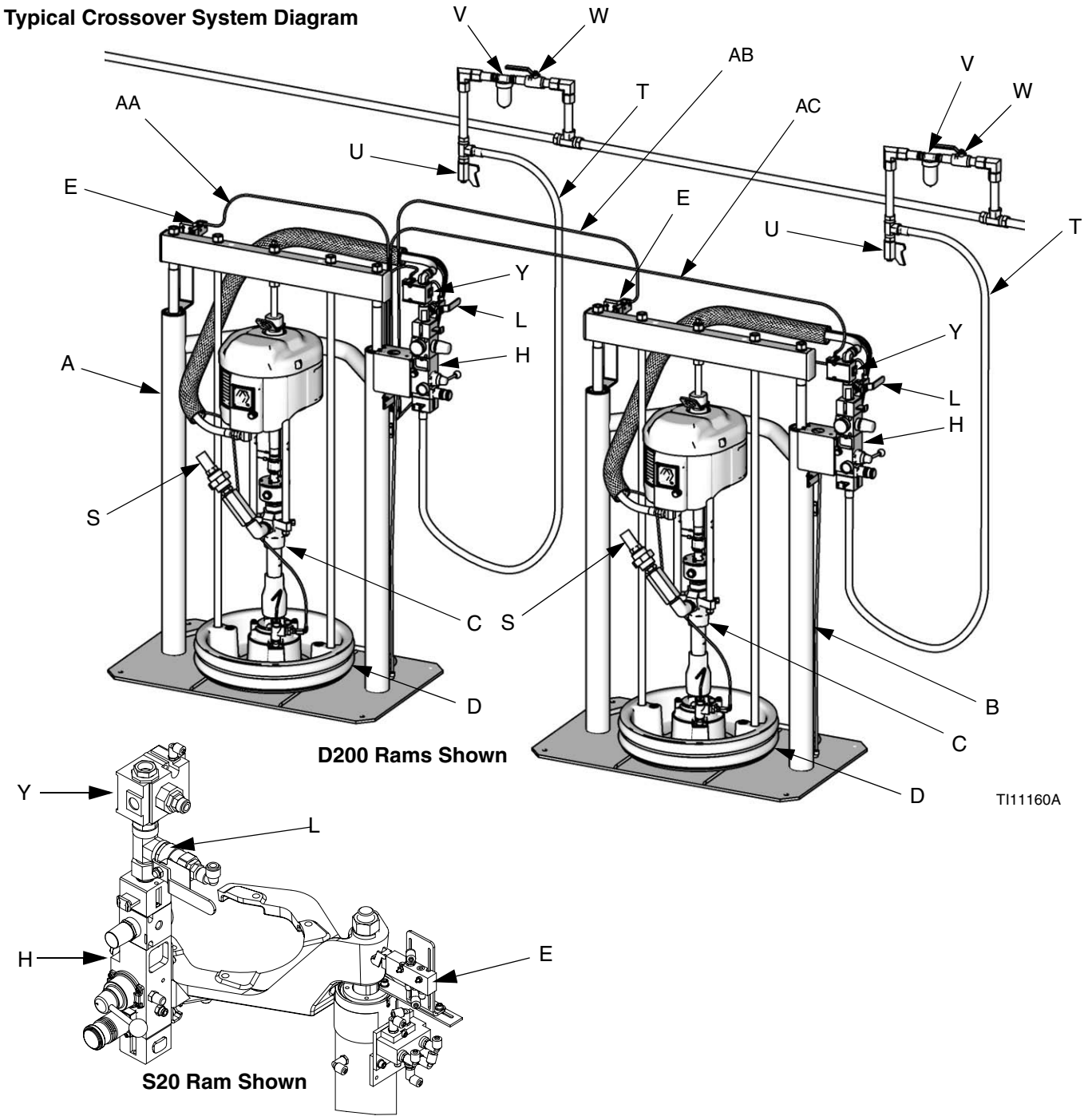


FIG. 1: Component Identification, Pneumatic Crossover

Key to FIG. 1:

A Ram A
B Ram B
C Pump (Ram A and B)
D Platen (Ram A and B)
E Limit Switch (Ram A and B)
H Integrated Air Controls (Ram A and B); see page 8
L Bypass Valve (Ram A and B)
S Fluid Line (not supplied)
T Main Air Line (not supplied)
U Air Line Drain Valve (not supplied)
V Air Filter (not supplied)
W Bleed-Type Air Shutoff Valve (not supplied)
Y Solenoid Valve (Ram A and B)
AA Cable from Ram A to Limit Switch A
AB Cable from Ram A to Limit Switch B
AC Main Crossover Cable; from Ram A to Solenoid B

Integrated Air Controls

The integrated air controls include:

- **Main air slider valve (BA):** turns air on and off to the system. When closed, the valve relieves pressure downstream.
- **Ram air regulator (BB):** controls ram up and down pressure and blowoff pressure.
- **Ram director valve (BC):** controls ram direction.
- **Exhaust port with muffler (BD)**
- **Air motor regulator (BE):** Controls air pressure to motor.
- **Air motor slider valve (BF):** turns air on and off to the air motor. When closed, the valve relieves air trapped between it and the air motor. Push the valve in to shutoff. **Remote DataTrak:** The air solenoid (Y, FIG. 1), the air motor slider valve (BF), and the main air slider valve (BA) must be open for air to flow. (See Remote DataTrak Setup section in Supply Systems operation manual 313526.)
- **Blowoff button (BG):** turns air on and off to push the platen out of an empty drum.

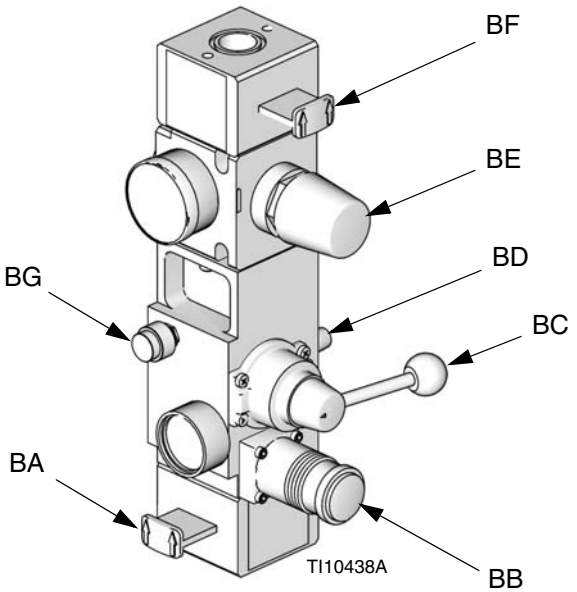


FIG. 2. Integrated Air Controls

Air Line Accessories

See FIG. 1.

- **Air line drain valve (U)**
- **Air line filter (V):** removes harmful dirt and moisture from compressed air supply.
- **Second bleed-type air valve (W):** isolates air line accessories and supply system for servicing. Locate upstream from all other air line accessories.
- **Air relief valve** (attached to ram air regulator, not visible): automatically relieves excessive pressure.

Setup

Ram Installation and Setup

1. Install and set up individual rams as explained in manual provided.
2. Install outlet check valve assemblies on each ram. Refer to page 25.
3. Install pneumatic crossover kits components on each ram.
    a. See pilot valve assembly drawing on page 22.
    b. Identify and locate the integrated air control module.
    c. Remove the air hose and air fitting from the top of the integrated air control module.

NOTE: Leave the hose attached to the air motor on the other end

    d. Install the pilot valve assembly on top of the integrated air control module as shown on page 22.
    e. Install removed fitting from step c into port 1 of the pilot valve assembly.
    f. Remove plug located on the integrated air control moduel and replace it with a tube fitting. (See item 209 on page 22).
    g. Install the crossover valve assembly on the ram cylinder as shown on page 22. This assembly will be installed on only one ram.
    h. See tubing drawing on page 16 (**D200 Ram Tube Connection Diagram**) or page 17 (**S20 Ram Tube Connection Diagram**) for location of level switch assembly.
    i. Install level switch assembly to the top of the ram cylinder as shown on page 23.
    j. Calibrate the switch to trip when the follower is about 2 in (51 mm) above the ram base.
    k. Tube the system using the appropriate D200 or S20 tubing drawing.

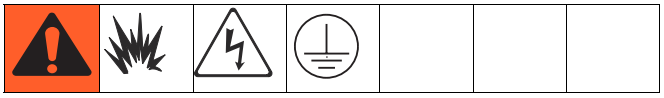
NOTE: The table on the drawing shows tubing cut lengths. Using longer tube lengths will require additional tubing (not provided).

4. When tubing is complete, slowly extend rams to the full up and full down positions and take note how the tubing moves.
5. Secure tubing in place with tape or wire ties.

NOTICE

To avoid machine damage and ensure proper operation, verify tubes are not pinched, kinked, or pulled taught where they are secured when the rams are raised or lowered.

Grounding



The equipment must be grounded. Grounding reduces the risk of static and electric shock by providing an escape wire for the electrical current due to static build up or in the event of a short circuit.

Pump: use ground wire and clamp (supplied). Loosen grounding lug locknut and washer. Insert ground wire end into lug slot and tighten locknut securely. Connect ground clamp to a true earth ground.

Air and fluid hoses: use only electrically conductive hoses with a maximum of 500 ft. (150 m) combined hose length to ensure grounding continuity. Check electrical resistance of hoses. If total resistance to ground exceeds 29 megohms, replace hose immediately.

Air compressor: follow manufacturer's recommendations.

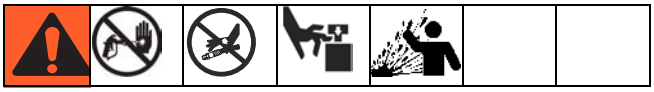
Dispense valve: ground through connection to a properly grounded fluid hose and pump.

Fluid supply container: follow local code.

Solvent pails used when flushing: follow local code. Use only conductive metal pails, placed on a grounded surface. Do not place the pail on a nonconductive surface, such as paper or cardboard, which interrupts grounding continuity.

To maintain grounding continuity when flushing or relieving pressure: hold metal part of the dispense valve firmly to the side of a grounded metal pail, then trigger the valve.

Pressure Relief Procedure



NOTE: Refer to FIG. 2 on page 8 for the following procedure.

1. Turn off the air motor slider valve (BF) on both ram A and B.
2. On both ram A and B, turn off the main air slider valve (BA). Set the ram director valve (BC) to the down position. The ram will slowly drop.
3. Perform **Pressure Relief Procedure** of the HFR system. See manual 3A2175.
4. On both ram A and B, open the drain valve and/or the pump bleed port. Have a container ready to catch the drainage.

If you suspect that the spray tip/nozzle or hose is completely clogged, or that pressure has not been fully relieved after following the steps above, very slowly loosen the tip guard retaining nut or hose end coupling and relieve pressure gradually, then loosen completely. Now clear the tip/nozzle or hose.

Startup

Flush Before Using Equipment

The pump was tested with lightweight oil, which is left in the fluid passages to protect parts. To avoid contaminating your fluid with oil, flush the pump with a compatible solvent before use. See your pump manual for flushing directions.

1. Perform **Setup** on page 9.
2. Verify the following:
   - That you have equal line air pressure supplied to both A & B units within 5 psi (35 kPa, 0.3 bar) of each other.
   - The Bypass/Prime ball valves (item L in FIG. 1, page 7) are closed,
   - That the air motor regulators are adjusted to 30 psi (210 kPa, 2.1 bar)

NOTICE
To prevent pump seal damage, adjust the pressure down if the motor cycles too rapidly during the following test procedure

3. Position both A & B units about half way up, place in “Neutral”, and open both motor isolation slider valves (item BA in FIG. 2 on page 8).
4. Verify that only one ram unit motor cycles.
5. Go to the “Active” ram with the cycling motor and lower it to the bottom.
6. Verify that the cross bar contacts and actuates the Air Limit Valve when lowered and that the Ram Crossover occurs.

NOTE: The motor of the ram lowered should stop and become “Inactive” and the opposite ram motor should begin to cycle becoming “Active”).

7. Verify that the Bypass/Prime function works on the “Inactive” ram by opening the Bypass/Prime ball valve. The “Inactive” ram motor should begin to cycle (the “Active” ram should continue to cycle).
8. Close the Bypass/Prime ball valve.
9. Raise the “Inactive” ram about half way and place in “Neutral”.
10. Move to the current “Active” ram and lower it to the bottom.
11. Verify that the cross bar contacts and actuates the Air Limit Valve when lowered and that the Ram Crossover occurs.

NOTE: The motor of the ram lowered should stop and become “Inactive” and the opposite ram motor should begin to cycle becoming “Active”).

12. Verify that the Bypass/Prime function works on the “Inactive” ram by opening the Bypass/Prime ball valve. The “Inactive” ram motor should begin to cycle (the “Active” ram should continue to cycle).
13. Close Bypass/Prime ball valve.
14. Lower the “Active” ram to the bottom. Verify that Ram Crossover does not occur.

NOTE: When an Active ram is lowered while the Inactive ram is still lowered, a crossover should not occur. A crossover in this condition could be caused by an air leak, unequal supply line pressures, or a problem with the 4-way Remote Air Valve.

15. Raise the opposit ram.
16. Verify that crossover occurs when the Air Limit Valve is deactivated. Lower the same ram and verify that Ram Crossover does NOT occur.
17. Startup Complete.

Shutdown

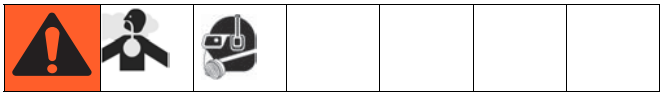
Turning the system OFF relieves pressure from the pump motor. It does not depressurize the fluid pressure. Follow the **Pressure Relief Procedure**, page 10.

The tandem supply controls do not effect essential system operation.

The tandem controls act to allow only one of the two pump air motors to run at any given time, unless the pilot valve is bypassed. To manually activate the air motor, open the bypass ball valve (FIG. 1, item L). Other system functions are not effected by the tandem controls.

1. Follow the procedure defined in the supply system manual for shutdown.

Prime



If the pump being primed is not the active pump, it will be necessary to activate the air motor by opening the bypass ball valve (FIG. 1, item L).

1. Follow the procedure defined in the supply system manual for priming.
2. After priming, close the bypass ball valve to allow the level sensors to shutdown the air motor.

Troubleshooting

NOTE: Refer to the Supply System Repair-Parts manual for specific ram troubleshooting. Refer to the Check-Mate Pump Packages manual for pump troubleshooting.

1. Follow **Pressure Relief Procedure**, page 10, before disassembling any part of the supply system.
2. Disconnect power before repairing the supply system.
3. Check all possible problems and causes before disassembling the supply system.

Problem	Cause	Verification	Solution
Does not crossover.	Alternate ram has an empty sensor activated.	Verify ram has material.	Replace empty drum.
	Alternate pump is not primed.	Verify alternate ram is ready to run.	Prime pump.
	Level switch not adjusted to trip properly.	Verify level switches activate at desired low level point.	Adjust level switch.

Repair

Ram Repair

See manual 313527 for ram and platen repair procedures and replacement parts.

Pump Repair

See pump manuals for pump repair procedures and replacement parts.

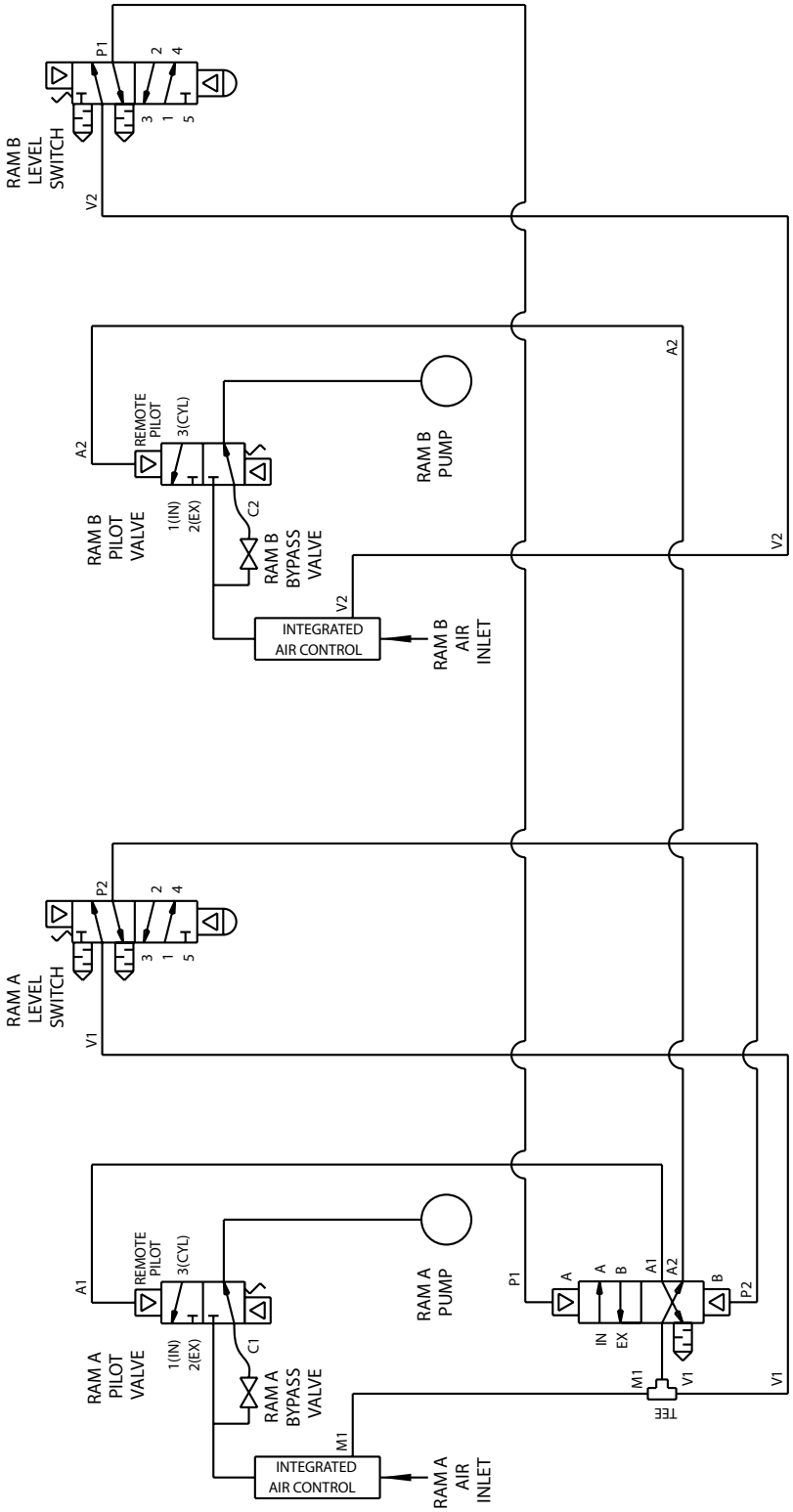
See manual 312796 for air motor repair procedures and replacement parts.

Crossover Schematics

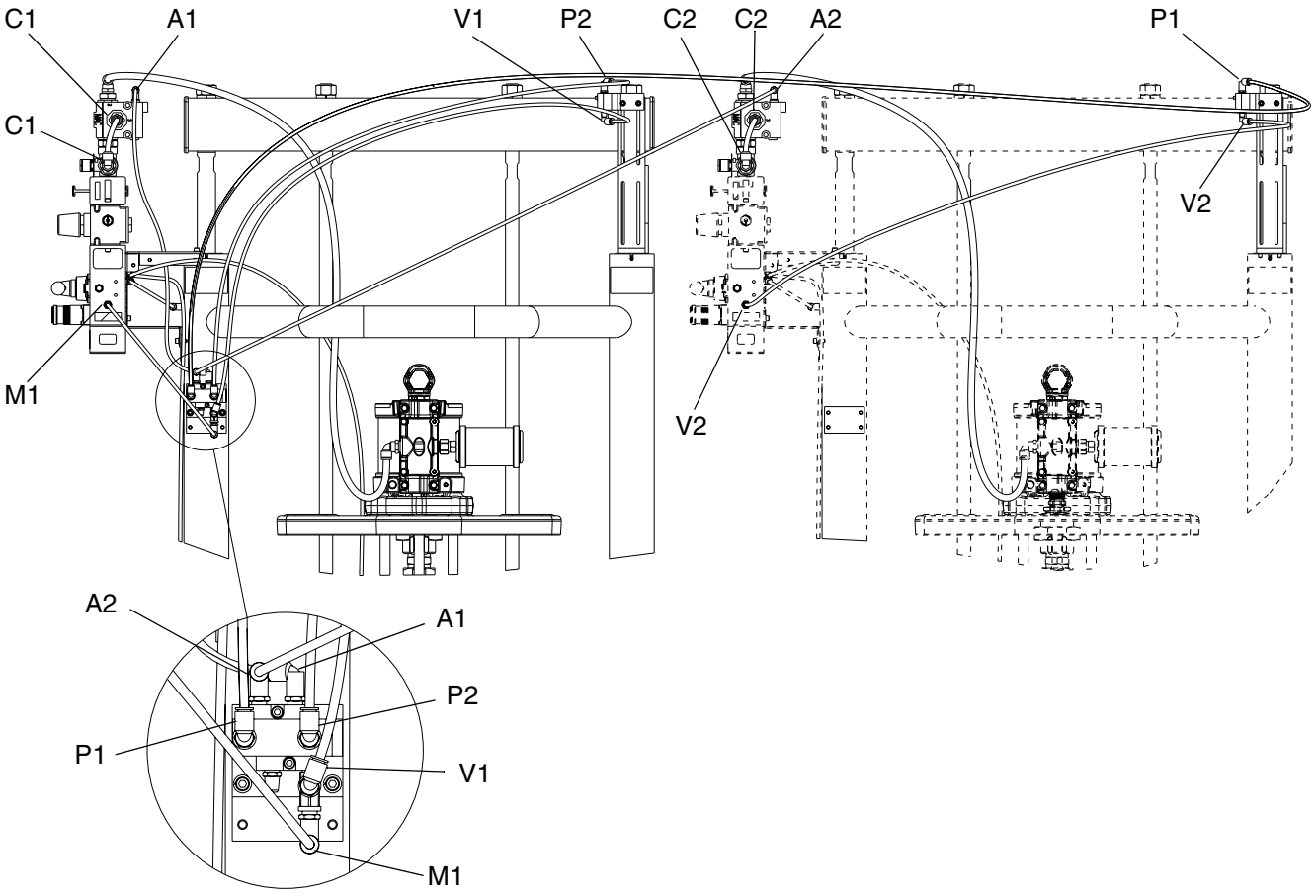
See page 15 for a schematic of pneumatic crossover systems.

Schematics

Pneumatic Crossover

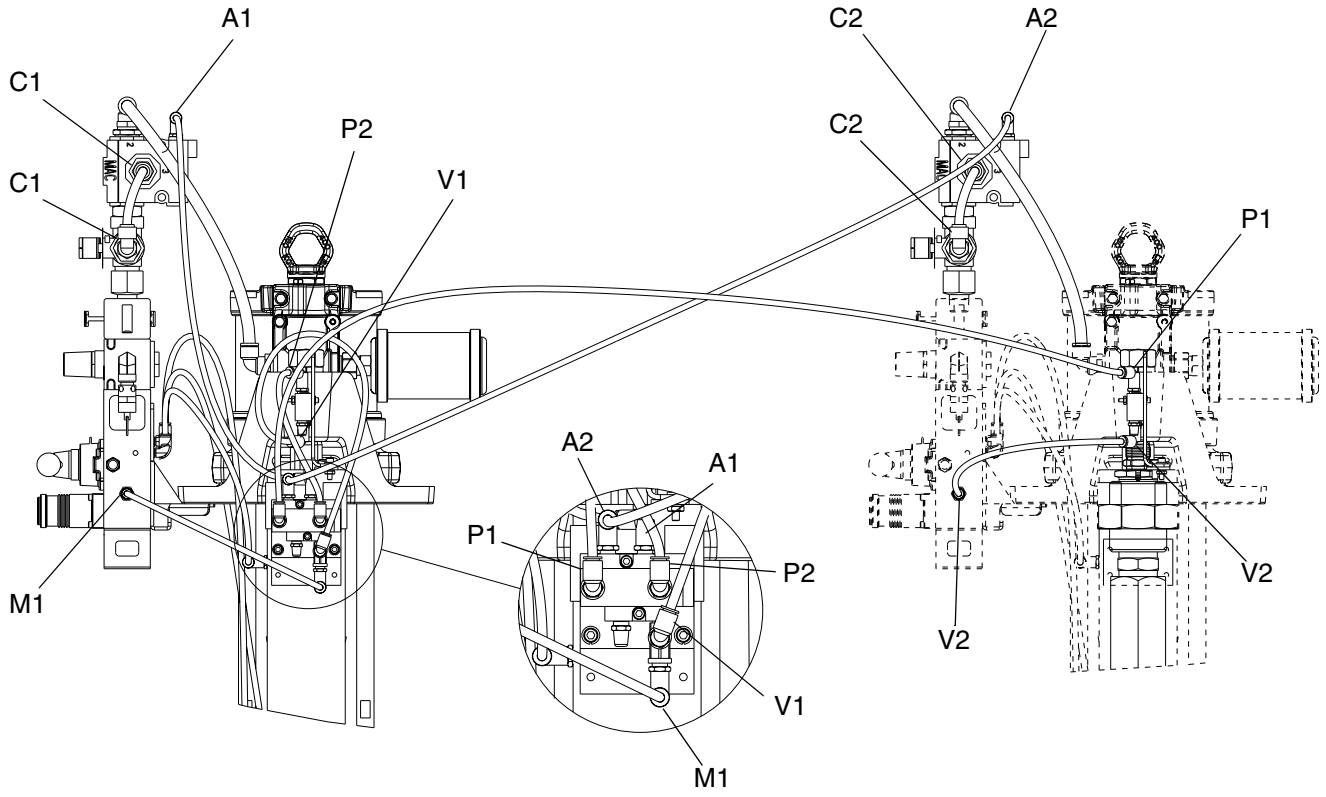


D200 Ram Tube Connection Diagram



Tag	Tube Size (in.)	Length in (mm)	Function
A1	1/4	36 (914)	Pilot air to switch on Unit A air motor
A2	1/4	180 (4572)	Pilot air to switch on Unit B air motor
C1	3/8	6.5 (165)	Bypass air - Unit A
C2	3/8	6.5 (165)	Bypass air - Unit B
M1	1/4	20 (508)	Main air to 4-way valve
P1	1/4	180 (4572)	Pilot air to switch from Unit B to A
P2	1/4	68 (1727)	Pilot air to switch from Unit A to B
V1	1/4	68 (1727)	Supply air to limit valve - Unit A
V2	1/4	68 (1727)	Supply air to limit valve - Unit B

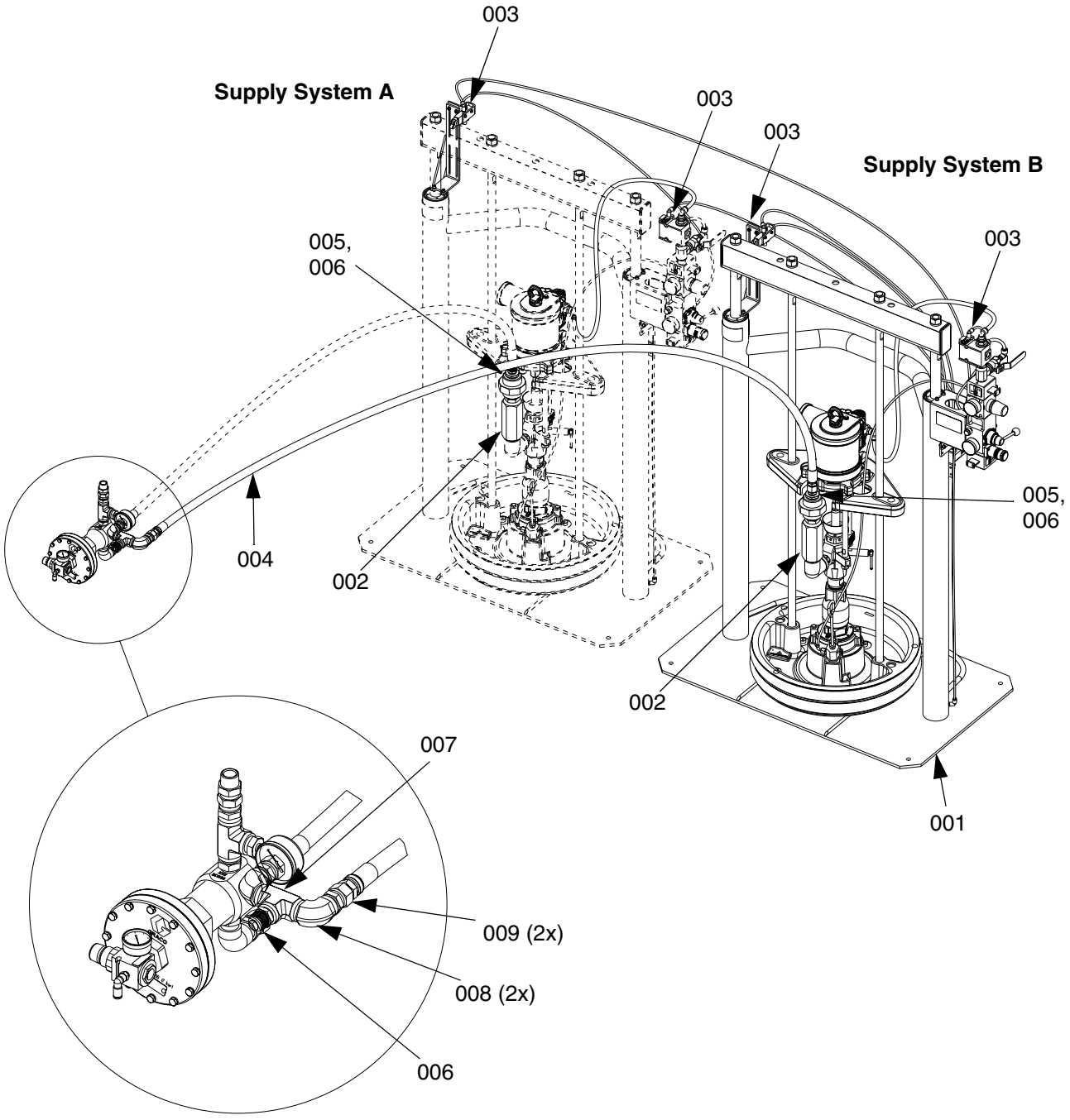
S20 Ram Tube Connection Diagram



Tag	Tube Size (in.)	Length in (mm)	Function
A1	1/4	61 (1550)	Pilot air to switch on Unit A air motor
A2	1/4	180 (4572)	Pilot air to switch on Unit B air motor
C1	3/8	6.5 (165)	Bypass air - Unit A
C2	3/8	6.5 (165)	Bypass air - Unit B
M1	1/4	49 (1245)	Main air to 4-way valve
P1	1/4	180 (4572)	Pilot air to switch from Unit B to A
P2	1/4	7 (178)	Pilot air to switch from Unit A to B
V1	1/4	12 (305)	Supply air to limit valve - Unit A
V2	1/4	49 (1245)	Supply air to limit valve - Unit B

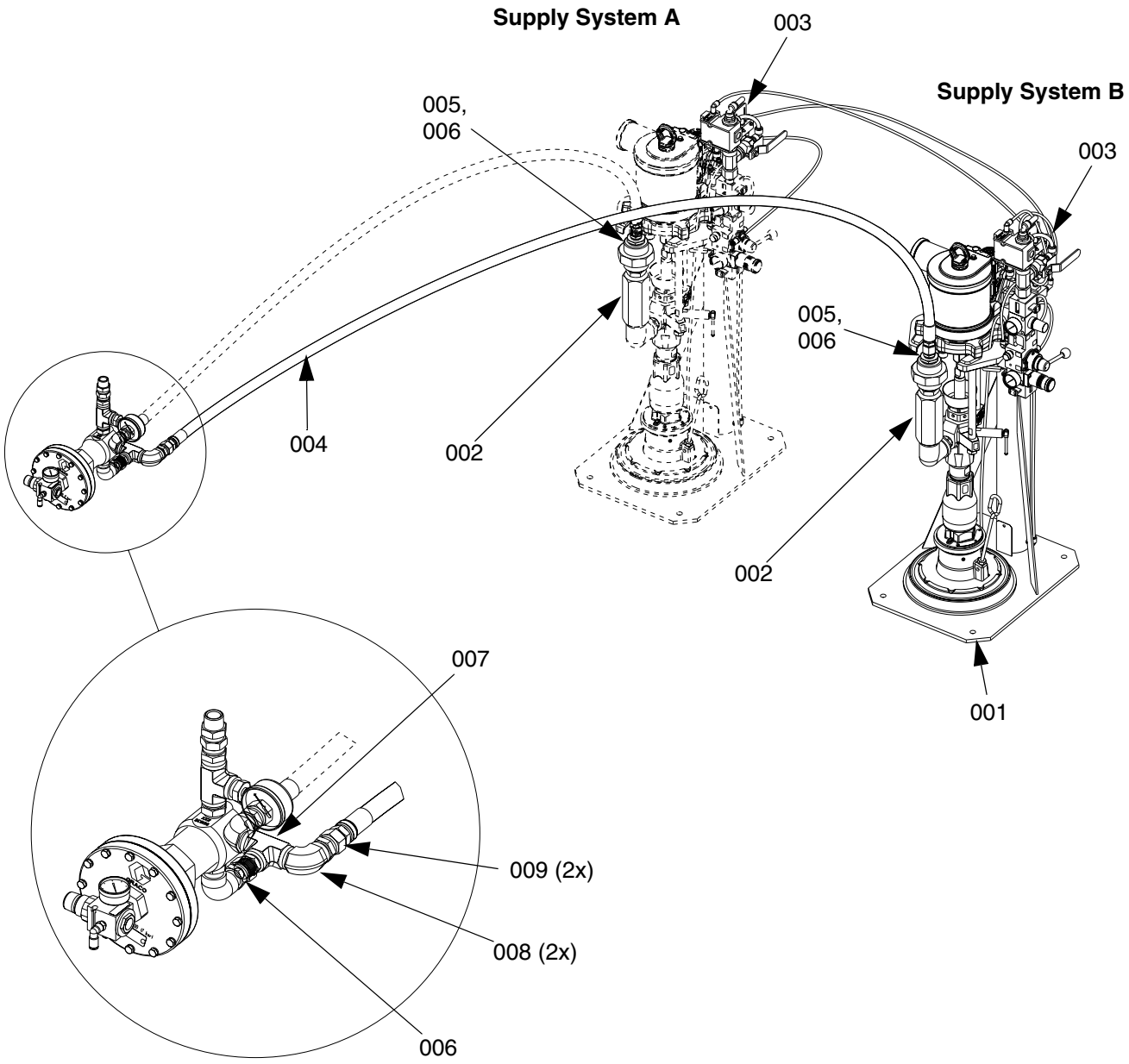
Parts

Tandem Supply System - D200



Ref	Part	Description	Quantity	
			24M226, KIT, upgrade, 20:1, pxover, 55 gallon, carbon	24M227, KIT, upgrade, 20:1, pxover, 55 gallon, stainless
001	CM7A59	SUPPLY UNIT, 20:1, 0 volt, d200	1	
	CM7C58	SUPPLY UNIT, 20:1, 0 volt, d200		1
002	257377	KIT, pump outlet check		2
	255452	KIT, pump outlet, check, carbon steel	2	
003	255675	KIT, pneumatic cross-over	1	1
004	24F726	HOSE, assy, 3/4id, female/male, sst		1
	24M225	HOSE, coupled, 180l, 3/4id	1	
005	C19661	BUSHING, reducing	2	
006	124406	FITTING, adapter, 3/4npt x 12jic	3	
	15M863	FITTING, connector, male		1
007	801787	FITTING, tee, pipe 3\4	1	
	113833	TEE, pipe, female		1
008	122763	FITTING, elbow, straight, 3/4npt, 90, ss		2
	122327	FITTING, elbow, street	2	
009	6303-21	ADAPTER, swvl, jic12x3/4npt, feamle/male	2	
	124433	FITTING, swivel, 3/4nptx12jic, male/female, sst		2

Tandem Supply System - S20

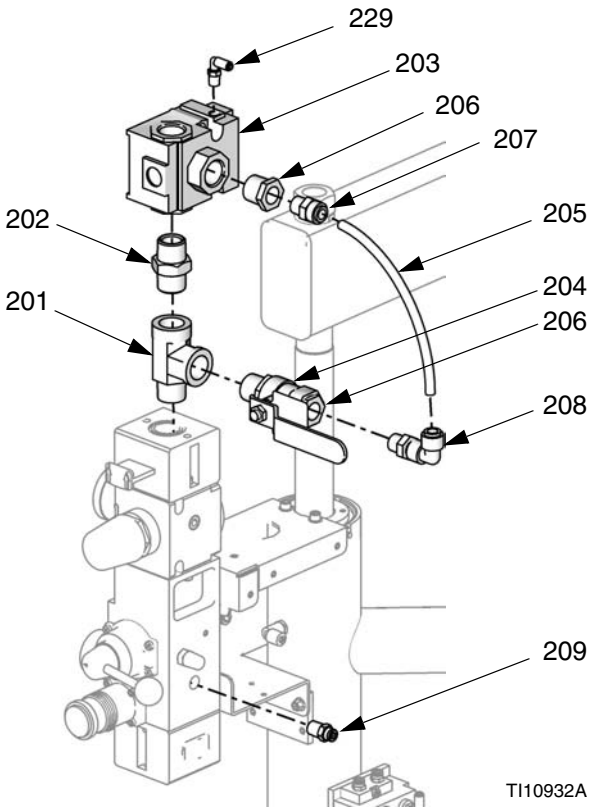


Ref	Part	Description	Quantity	
			24M228, KIT, upgrade, 20:1, pxover, 5 gallon, carbon	24M229, KIT, upgrade, 20:1, pxover, 5 gallon, stainless
001	CM7A3C	SUPPLY UNIT, 20:1, 0 volt, s20, 20l	1	
	CM7C3F	SUPPLY UNIT, 20:1, 0 volt, s20, 20l		1
002	257377	KIT, pump outlet check		2
	255452	KIT, pump outlet, check, carbon steel	2	
003	257373	KIT, pneumatic xover	1	1
004	24F726	HOSE, assy, 3/4id, 180l, feamle/male, sst		1
	24M225	HOSE, cpld, 180l, 3/4id	1	
005	C19661	BUSHING, reducing	2	
006	124406	FITTING, adapter, 3/4npt x 12jic	3	
	15M863	FITTING, connector, male		1
007	801787	FITTING, tee, pipe 3\4	1	
	113833	TEE, pipe, female		1
008	122763	FITTING, elbow, straight, 3/4npt, 90		2
	122327	FITTING, elbow, street	2	
009	6303-21	ADAPTER, swivel, jic12x3/4npt, female/male	2	
	124433	FITTING, swivel, 3/4nptx12jic, male/female		2

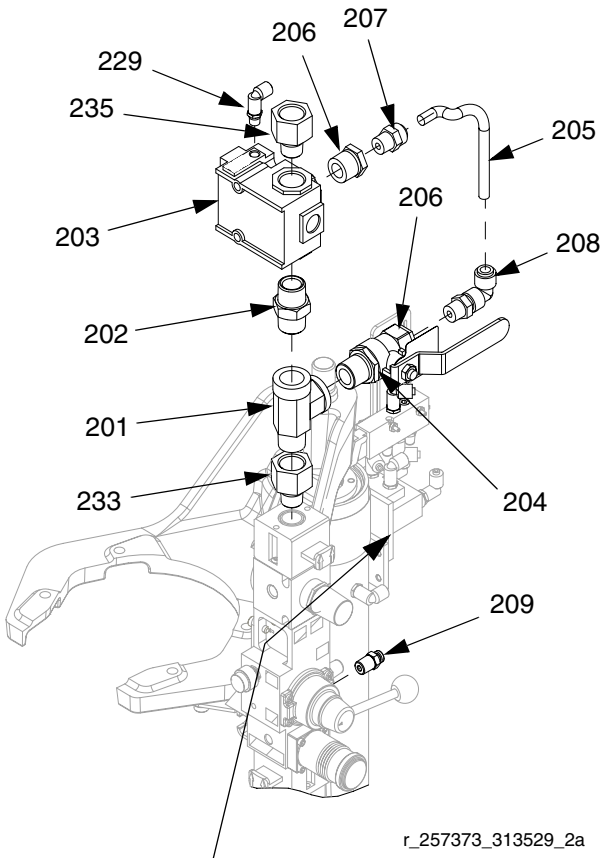
Pneumatic Crossover Kits

255675, for 3 in. D200 Rams
257373 for S20 Rams

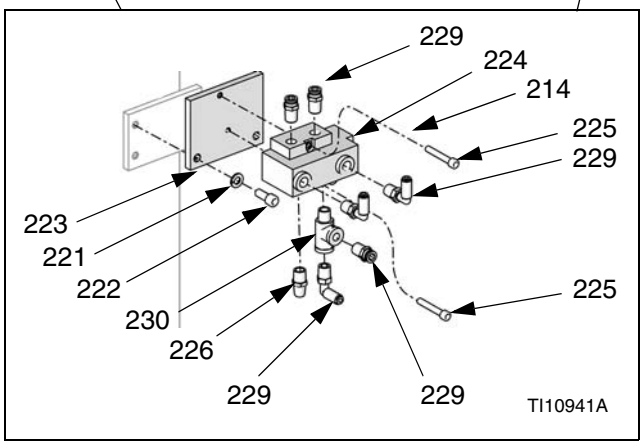
Pilot Valve Assembly 255675



Pilot Valve Assembly 257373

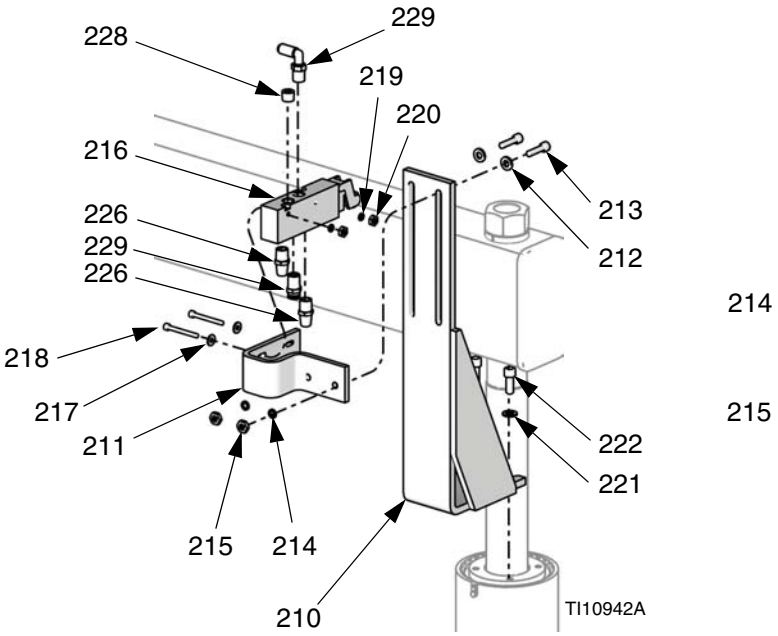


Typical Crossover Valve Assembly

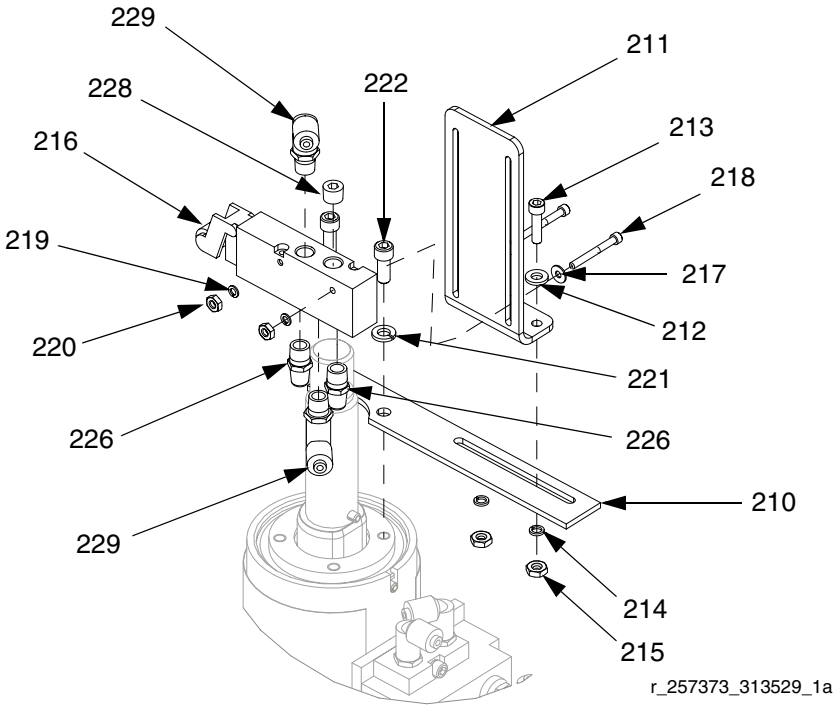


Pneumatic Crossover Kits (continued)

Level Switch Assembly 255675



Level Switch Assembly 257373



Pneumatic Crossover Kits

Ref.	Part	Description	Qty
201	111337	TEE, street; 3/4 npt(m) x 3/4 npt(f) x 3/4 npt(f)	2
202	C20487	NIPPLE, hex; 3/4 npt	2
203	C59752	VALVE, pneumatic, 3-way.	2
204	113218	VALVE, ball, vented; 3/4 npt (m x f)	2
205	C12508	HOSE, nylon; 3/8 in. (10 mm) OD; 6 in. (153 mm); black	AR
206	C19683	BUSHING, reducing; 3/4 npt(m) x 3/8 npt(f)	4
207	115240	FITTING, tube; 3/8 npt(m) x 3/8 in. (10 mm) OD tube	2
208	115436	ELBOW, tube, 90°; 3/8 npt(m) x 3/8 in. (10 mm) OD tube	2
209	116658	FITTING, tube; 1/4 npt(m) x 1/4 in. (6 mm) OD tube	2
210	---	BRACKET, crossover	2
211	---	BRACKET, limit valve; for D200 rams	2
	---	BRACKET, limit valve; for S20 rams	2
212	104116	WASHER, plain; #10	4
213	111820	SCREW, cap, socket hd; 10-24 x 3/4 in. (19 mm)	4
214	C19204	WASHER, lock; #10	6
215	100179	NUT, hex mscr; 10-24	4
216	C06182	VALVE, limit, air	2
217	100813	WASHER, flat	4
218	C19965	SCREW, cap, socket-hd; 6-32 x 1-1/4 in. (31 mm)	4
219	100068	WASHER, lock, spring; #6	4
220	100072	NUT, hex mscr; 6-32	4
221	100016	WASHER, lock; 1/4	6
222	101682	SCREW, cap, socket-hd; 1/4-20 x 5/8 in. (16 mm)	6
223	---	PLATE, mounting, 4-way valve	1
224	113338	VALVE, air, remote, 4-way	1
225	123366	SCREW, cap, socket-hd; 10-24 x 1-1/8 in. (29 mm)	2
226	C06061	MUFFLER	5
228	100139	PLUG, pipe; 1/8 npt	2
229	597151	ELBOW, tube; 1/8 npt(m) x 1/4 in. OD tube	12
230	110475	TEE, street; 1/8 npt(m) x 1/8 npt(f) x 1/8 npt(f)	1
231	C12509	TUBE, nylon; 1/4 in. (6 mm) OD; 52 ft (15.9 m); black	AR
232★	114958	STRAP, tie	4
233	104969	BUSHING, reducing; for S20 rams	2
235	100896	BUSING, reducing	2

★ *Not shown.*

--- *Not for sale.*

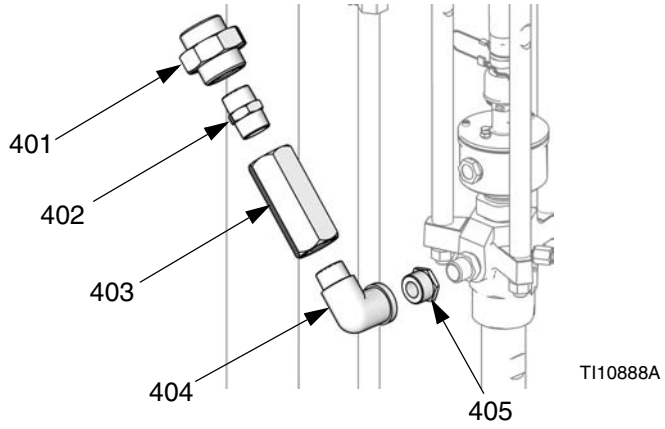
Pump Outlet Check Valve Kits

255452, used on carbon steel Check-Mate 60 and 100 Displacement Pumps (shown)

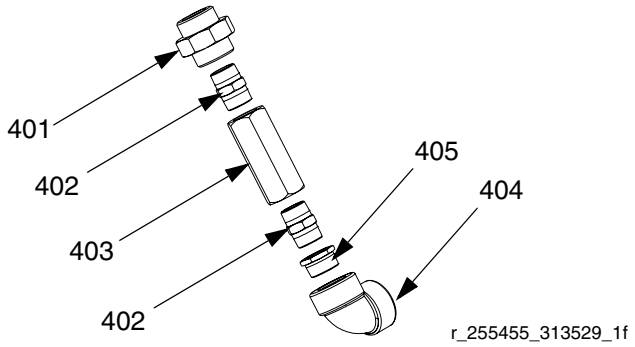
257377, used on stainless steel Check-Mate 60 and 100 Displacement Pumps

Ref.	Description	255452	257377
401	UNION, pipe; 1-1/4 in. npt(f)	521975	
	CONNECTOR; 3/4 npt(m) x 1 in. unf		15M863
402	NIPPLE, hex; 1-1/4 in. npt	C20490	
	NIPPLE, hex; 1-1/4 in. npt		
	NIPPLE, reducing; 1 in. npt x 3/4 npt		
403	VALVE, check; 1-1/4 in. npt (fbe)	521850	
	VALVE, check; 3/4 npt (fbe)		C59546
404	ELBOW, street, 90°; 1 in. npt (m x f)	C38324	
	ELBOW; 3/4 npt (m x f)		15M864

Ref.	Description	255452	257377
	ELBOW; 1-1/2 in. npt (f x f)		
405	BUSHING, reducing; 1 in. npt(m) x 3/4 npt(f)	C19661	
	NIPPLE, reducing; 1-1/4 in. npt x 1 in. npt		
	NIPPLE, reducing; 1 in. npt x 3/4 npt		
	BUSHING, reducing; 1-1/2 npt x 1-1/4 npt (fbe)		
	COUPLING, reducing; 1-1/2 in. npt x 1 in. npt (fbe)		



255455 Shown



4.

Technical Data

Max air input pressure (supply system)	psi (MPa, bar) / Air inlet size
S20 - 3 in. single post, 5 gal. (20 L)	125 (0.9, 9) / 1/2 npt(f)
D200 - 3 in. dual post, 55 gal. (200 L), 30 gal. (115 L), 16 gal. (60 L), 8 gal. (30 L), 5 gal. (20 L)	150 (1.0, 10) / 3/4 npt(f)
Max fluid, air working pressure, and weigh (displacement pump)	For Check-Mate pump packages, see manual 312376.
Pump Wetted parts	For Check-Mate displacement pumps, see manual 312375.
Ambient operating temperature range (supply system)	32-120 °F (0- 49°C)
Sound data	See separate air motor manual.

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

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Original instructions. This manual contains English. MM 3A2264

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